

Message Text

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TAGS: ESTC, COCOM, UR, US

SUBJECT: US EQUIPMENT FOR DESIGN AND MANUFACTURE OF
CONTINUOUS AND PRISMATIC LENSES TO USSR - IL 1565 AND
1091

REF: A) COCOM DOC (75)2613
B) STATE 294577
C) STATE 296539
D) OECD PARIS 33395

MATERIAL REFERRED TO IN REF B AS "BROCHURES" CONSISTS
OF FOUR XEROXED PAGES CONTAINING ADDITIONAL INFORMATION
ON EQUIPMENT INVOLVED AND IS REPEATED BELOW AS CORRECTED
BY REF C:

3 AXIS MEASURING MACHINE

THE SURFACE CONTOUR MACHINE MEASURES THE HEIGHT OF A
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SURFACE AT A SPECIFIED POINT RELATIVE TO AN XY REFERENCE

PLANE. THE MACHINE CONSISTS OF SIX BASIC COMPONENTS:

1. RUGGED BASE OF JIG BORE QUALITY
2. MEASURING PROBE ASSEMBLY
3. MECHANICAL ENCODER
4. XY DRIVE MOTORS AND POSITIONING CONTROLLERS
5. XY POSITION DISPLAY
6. COMPUTER INTERFACE

THESE COMPONENTS HAVE THE FOLLOWING INDIVIDUAL FUNCTIONS:

1. THE BASE PROVIDES A STABLE MOUNT FOR A HIGHLY ACCURATE XY TABLE. TABLE ACCURACY IS BETTER THAN .00006 INCHES (.0015 MM).
2. THE MEASURING PROBE ASSEMBLY CONSISTS OF A SURFACE CONTACTING PROBE WHICH RIDES ON AIR BEARING SLIDE. THE PROBE IS COUNTER BALANCED AND MOTOR DRIVEN TO ALLOW AUTOMATIC WITHDRAWAL OF THE PROBE FROM THE SURFACE.
3. A MECHANICAL ENCODER MEASURES THE RELATIVE MOVEMENT OF THE SURFACE CONTACTING PROBE. THIS ENCODER SYSTEM INCLUDES A DIGITAL READOUT OF RELATIVE PROBE POSITION. A RELATIVE ZERO POSITION MAY BE SET AT ANY DESIRED POINT.
4. THE XY DRIVE MOTORS ARE HIGH ACCURACY STEPPING TYPE MOTORS WHICH ENABLE THE XY TABLE TO BE POSITIONED WITHIN .0001 INCHES (.00254 MM) OF A DESIRED POINT. THE MOTOR CONTROLLERS PROVIDES AUTOMATIC POSITION INDEXING AND MANUAL POSITIONING CAPABILITIES.
5. THE XY POSITION INDICATOR DISPLAYS THE XY TABLE POSITION WITHIN .0001 INCHES (.00254 MM).
6. THE COMPUTER INTERFACE ALLOWS THE MEASURING MACHINE TO BE OPERATED VIA COMPUTER PROGRAM CONTROL. ALL FUNCTIONS OF THE MACHINE MAY BE COMPUTER DRIVEN. THE DATA FROM THE MEASURING PROBE IS AUTOMATICALLY TRANSFERRED ON TO THE COMPUTER WHERE IT IS STORED ON THE MEMORY DISK FOR SUBSEQUENT PRINTOUT FOR QUALITY CONTROL PROCESSING.

SPARE PARTS -

- (1) MOTOR
- (1) INDEXER

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COMPUTERS

THE COMPUTER FACILITY INCLUDES TWO MAJOR COMPONENTS, THE IBM 1130 SYSTEM AND THE IBM SYSTEM/7 PROCESS-CONTROL COMPUTER, WITH AUXILIARY EQUIPMENT INCLUDING THE MACHINE CONTROL MULTIPLEXER MANUFACTURED BY TINSLEY, A PEN PLOTTER MANUFACTURED BY CALIFORNIA COMPUTER PRODUCTS, TWO IBM KEYPUNCHES, AND A VARIETY

OF STORAGE CABINETS.

THE IBM 1130 COMPUTER IS A SMALL SCIENTIFIC SYSTEM
USED IN THE LENS DESIGN AND MACHINE TOOL COMMAND
GENERATION PROCESS. ORGANIZED AROUND A 16-BIT

GENERAL-PURPOSE CENTRAL PROCESSING UNIT WITH AN IBM
SELECTRIC-TYPE CONSOLE, THE SYSTEM INCLUDES A
CARD READER AND PUNCH, A LINE PRINTER, A SINGLE
REMOVABLE DISK FOR ON-LINE MASS STORAGE, AND A CAL
COMP PEN PLOTTER. THE PROGRAMMING IS FOR THE MOST PART
IN FORTRAN, A HIGH-LEVEL SCIENTIFIC AND ENGINEERING
PROGRAMMING LANGUAGE.

ELECTRICALLY LINKED TO THE IBM 1130 IS THE IBM SYSTEM/7,
A PROCESS-CONTROL COMPUTER DEDICATED TO REAL-TIME
CONTROL OF THE MACHINE TOOL AND MEASURING EQUIPMENT. IT
IS SUPPLIED WITH TWO DISKS, ONE OF WHICH IS REMOVABLE,
FOR THE TEMPORARY STORAGE OF FILES OF MACHINE TOOL
COMMANDS AND MEASUREMENT DATA. A SEPARATE TELETYPE
CONSOLE IS PROVIDED FOR OPERATOR CONTROL. PROGRAMMING
OF THE SYSTEM/7 IS LARGELY IN ASSEMBLER LANGUAGE.

CONTROL OF MACHINE TOOL AND MEASURING EQUIPMENT
IS ACCOMPLISHED VIA THE TINSLEY MULTIPLEXOR, CONNECTED
TO THE INPUT AND OUTPUT LINES OF THE SYSTEM/7. THIS
DEVICE ENABLES CONTROL OF A LARGE NUMBER OF MACHINES
CONNECTED VIA SIMPLE DUAL TWISTED-PAIR OR COAXIAL
CABLES BY VIRTUE OF ITS ORGANIZATION AS A GENERAL-
PURPOSE COMMUNICATIONS MULTIPLEXOR.

TWO IBM 029 KEYPUNCHES ARE PROVIDED FOR THE PREPARATION
OF DATA AND PROGRAMS FOR THE IBM 1130 AND SYSTEM/7.
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STORAGE FACILITIES FOR CARD DECKS, DISKS, AND PRINTED
OUTPUT ARE ALSO INCLUDED. KISSINGER

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